(Concise description of the invention)

The invention relates to a plasma generation source for use in a plasma CVD device or a plasma etching device, using an electronic cyclotron resonance by a microwave excitation.

(Third embodiment)

Fig. 3 shows a configuration view of a third embodiment of the present invention. This embodiment is basically identical to that of Fig. 2. Reference numeral 16 is a gas inlet opening; and 17 is a plasma generation chamber. Reference numeral 17A is a dielectric region; and 17A-1 is an atmospheric space, but it may be formed of a dielectric material. Reference numeral 17A-2 is a dielectric; and 17B is a plasma generation region. In this configuration, vacuum sealing is achieved by the cup-shaped dielectric 17A-2. In this case also, if the permittivity of the dielectric region 17A, and the dimension and position of the microwave introduction direction are properly chosen, the electric field intensity of a microwave becomes strong at the boundary of the plasma generation region 17B, as described hereinabove. Therefore, it is possible to operate a plasma generation source by the same operation as in the first embodiment and produce an efficient plasma.

The plasma generation source of the present invention has been described heretofore as being used mainly as a plasma · radical generation source. However, it may be particularly effective as a high density· large current ion source if an ion extraction electrode system configured as three sheets of electrodes of acceleration-deceleration configuration is employed. Further, it is effective as a low energy ion generation source as well, if one sheet electrode · single mesh electrode is employed.